

ABSTRACT OF THE DISCLOSURE

A data dependent scrambler for a communications channel that receives a user data sequence including N symbols each with M bits includes a seed finder that selects a scrambling seed and a first scrambler that receives said user data sequence and said scrambling seed from said seed finder. The first scrambler generates a scrambled user data sequence. A first encoder identifies a string of X consecutive zeros in adjacent symbols of the scrambled user data sequence and replaces one of the adjacent symbols with an all-one symbol. The first encoder replaces the other of the adjacent symbols with first bits representing a position of the string of X consecutive zeros and second bits representing bits of the adjacent symbols that are not in the string of X consecutive zeros.